

NSBF Conventional Electronics Interconnection

Interconnection for Conventional Balloon Flights

1. Commanding:

CIP Commanding utilizes a 16-bit data word and 77 available discreet commands (10 through 5C hexadecimal). These commands are accessible on the CIP J-2 connector (depicted in Figure 1 (Picture) and Figure 2 (Pin-Out)) as open collector outputs with a maximum rating of 500ma continuous and maximum 50V pull-up voltage (an in-line current limiting resistor is also required). The computer output data stream to the NSBF GSE computer is also specified in the Conventional GSE Science Command Interface PDF file available on the NSBF Web Page under Documents at the following URL;
http://www.nsbfnasa.gov/Conventional_GSE_SCI_CMD.pdf.

Commanding Format:

The scientist may send commands to the flight computer by complying with the following instructions:

A. An RS-232 port must be provided and set up in the following manner:

1200 Baud, no parity, 8 bits, 1 stop bit or; 1200, N, 8,

B. A command equals:

Letter "S"

Command equals four characters

Space

Address equals two characters

Letter "K" (DISCRETE) or "W" (DATA WORD)

Repeat above twice

Carriage return (#13)

Line feed (#10)

EXAMPLE: To send discrete command 23, address 12: the following would be sent:

S0023*12KS0023*12KS0023*12K<CR><LF>

EXAMPLE: To send the data word command AB03, address 12: the following would be sent:

SAB03*12WSAB03*12WSAB03*12W<CR><LF>

C. The flight computer command management system will return "AADD/COMMAND/TIME CR LF" if the command is successfully sent.

D. **Addresses** 10 through 1F (Hexadecimal) are available as are **commands** 10 through 5C (Hexadecimal). Commands or addresses outside these constraints will generate appropriate error messages.

E. The discrete commands are now in Hexadecimal.

NSBF Conventional Electronics Interconnection

F. The discrete commands are set up to output a "low" (which is an activated open collector driver) when the command is sent.

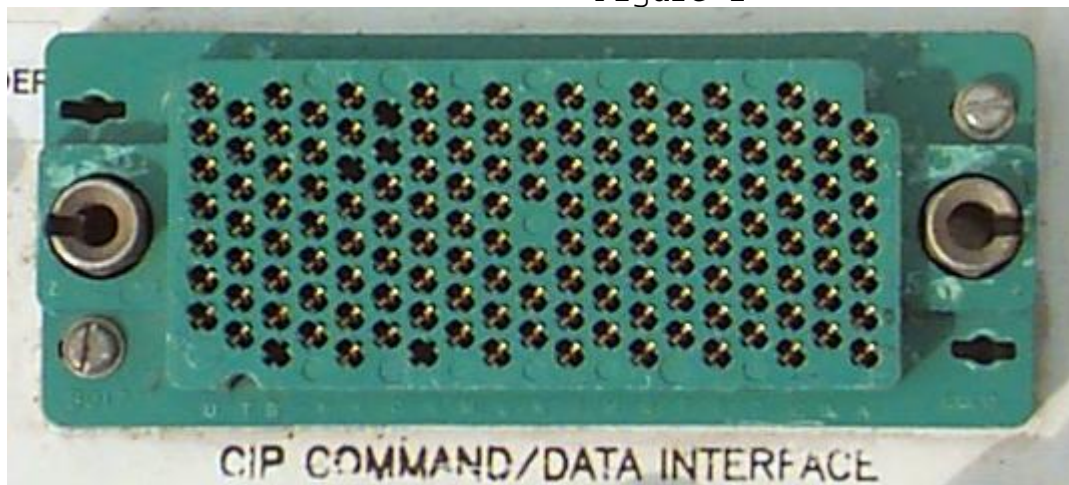
G. The Data Word is set up to output a "high" (a non-activated open collector driver) when the Data Word bit is sent true or "high"; for example if all bits are sent true with a Data Word Command FFFF all bits would be seen as "high" with non-activated open collector drivers.

H. The Data Word bits are on J-2 and pins A3 through C3, the strobelo pulse is on J2 pin C5 with the strobehi pulse residing on J2 pin C7. Two Data Word Strobes are also available for use on the CIP J-2 Elco connector, strobelo and strobehi. Strobelo is a 1 millisecond negative going pulse, strobehi is a 1 millisecond positive going pulse and they activate when a Data Word command has been received and the output bits have been set to enable the scientist to "strobe in" their data.

2. Voltage Control Oscillators are available in Standard IRIG channels 1,3,5,7,8,9,,B,E,and HH. Input impedance is 500 Kohms for channels 1 through 9 and 250 Kohms for channels B,E, and HH.

3. Two types of Telemetry Transmitters are available for use. The first type of Telemetry Transmitter is a "Digital" transmitter which requires a 0V to +5V input and the second type of Telemetry transmitter must be provided with a bipolar input the amplitude of which is dependant upon the bit-rate being used.

Figure 1



CIP J-2 120-Pin Elco Connector

NSBF Conventional Electronics Interconnection

Figure 2
Pin-Out of CIP J-2 120 Pin Connector

	1	2	3	4	
A	A3 DWB0	E1 CMD1B	J1 CMD39	N1 CMD56	S1 NSBF10.3
	A5 DWB1	E3 CMD1C	J3 CMD3A	N3 CMD57	S3 NSBF10.4
	A7 DWB2	E5 CMD1D	J5 CMD3B	N5 CMD58	S5 GPSH1PPS
	A9 DWB3	E7 CMD1E	J7 CMD3C	N7 CMD59	S7 GPSH2PPS
	A11 DWB4	E9 CMD1F	J9 CMD3D	N9 CMD5A	S9 NSBF10.5
	A13 DWB5	E11 CMD20	J11 CMD3E	N11 CMD5B	S11 NSBF10.6
	A15 DWB6	E13 CMD21	J13 CMD3F	N13 CMD5C	S13 NSBF10.7
	B2 DWB7	E15 CMD22	J15 CMD40	N15	
	B4 DWB8	F2 CMD23	K2 CMD41	O2	T2 NSBF10.8
	B6 DWB9	F4 CMD24	K4 CMD42	O4	T4 NSBF10.9
	B8 DWB10	F6 CMD25	K6 CMD43	O6 CMD5VER	T6 NSBF10.10
	B10 DWB11	F8 CMD26	K10 CMD44	O8 CH.HH.IN	T8 NSBF10.11
B	B12 DWB12	F10 CMD27	K12 CMD45	O10 CH.B.IN	T10 NSBF10.12
	B14 DWB13	F12 CMD28	K14 CMD46	O12 CH.9.IN	T12 NSBF10.13
	C1 DWB14	F14 CMD29	L1 CMD47	O14 TOJ3-AZ	T14 NSBF10.14
	C3 DWB15	G1 CMD2A	L3 CMD48	P1 CH.7.IN	U1 NSBF10.15
	C5 STROBELO	G3 CMD2B	L5 CMD49	P3 CH.8.IN	U3 NSBF10.16
	C7 STROBEHI	G5 CMD2C	L7 CMD4A	P5	U5 NSBF10.17
	C11 CMD10	G7 CMD2D	L9 CMD4B	P7 CH.5.IN	U7 GND
	C13 CMD12	G9 CMD2E	L11 CMD4C	P9 CH.E.IN	U9 GND
	C15 CMD13	G11 CMD2F	L13 CMD4D	P11 MKSBUFOUT	U11 GND
C	D2 CMD14	G13 CMD30	L15 CMD4E	P13 MKSHILO.BIT	U13 GND
	D4 CMD15	G15 CMD31	M2 CMD4F	P15 MKSLO.BIT	
	D6 CMD16	H2 CMD32	M4 CMD50	R2 MKSMID.BIT	
	D8 CMD17	H4 CMD33	M6 CMD51	R4 MKSHI.BIT	
	D10 CMD18	H6 CMD34	M8 CMD52	R6 GND	
	D12 CMD19	H8 CMD35	M10 CMD53	R8 GND	
	D14 CMD1A	H10 CMD36	M12 CMD54	R10 GND	
		H12 CMD37	M14 CMD55	R12 NSBF10.1	
		H14 CMD38		R14 NSBF10.2	
D					

COMMANDS ARE IN HEXIDECIMAL

Title CIP J-2		
Size A	Number	Revision B
Date: 9/24/2003	Sheet of 1	
File: F:\Program Files\U2\SCHDOC	Drawn By: GM	

Elco Pins can be ordered from Newark;
Manufacturers number 516-290-590
Newark number [13H6679](#)